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Bowker, Horace

A further survey of the farm problem

New York

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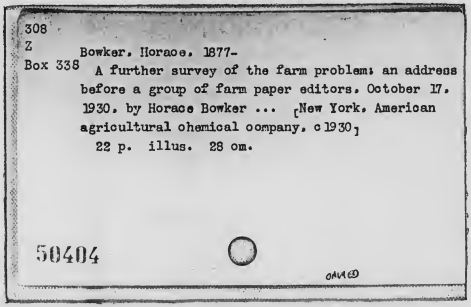

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A Further Survey
of the
Farm Problem

An Address before
a group of
Farm Paper Editors
October 17, 1930

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by
HORACE BOWKER, *President*
The AMERICAN AGRICULTURAL CHEMICAL Co.
New York

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The American Agricultural Chemical Company
New York

Sep 14 1931

A FURTHER SURVEY *of the* FARM PROBLEM

An Address before Farm Paper Editors at The Harvard Club, New York, October 17, 1930, by Horace Bowker, President, The American Agricultural Chemical Company

BACK in 1908, in a typically dynamic address, the late Theodore Roosevelt said: "The farmer is, as a rule, better off than his forebears, but his increase in well-being has not kept pace with that of the country at large." That was a generation ago. Yet the statement is just as true now as it was the day it was uttered.

Are we making any headway? Are we getting to first-base in the effort to solve what we conveniently term the "farm problem"? I think you will agree it is a fair question.

As a keen observer expresses it, "The farmer is a man with a perennial problem." Yet the farmer does not bear his burden alone. The farm paper, like the fertilizer manufacturer and others who serve the farmer, is just as directly concerned as the man with the hoe himself.

In the effort to help formulate the broader policies of the Company of which I am the head, I decided about a year ago that it was imperative to find out where we, as a part of agriculture, were headed? I realized only too well that the future of the fertilizer industry was, for better or for worse, directly dependent upon the future of the farmer. The consumption of fertilizer had shown a disappointingly slow rate of growth.

For close to three-quarters of a century, the American fertilizer industry has been selling its wares. It is a clearly demonstrable fact that every dollar the farmer invests in fertilizer pays him at least three dollars in return. Yet, the annual consumption is something less than eight million tons a year.

I therefore asked myself the question, "Is the fertilizer industry a fundamental economic necessity?" And I could not afford to take guesswork or unfounded optimism for an answer.

Low Fertilizer Consumption

American fertilizer consumption is astoundingly low. If American farmers used the same amount of fertilizer per acre of cultivated land as do the farmers of Great Britain, our annual consumption would amount to 10 million tons. If we use France as a basis of comparison, American consumption would be 25 million tons. On the basis of German per-acre plant food application we should use 63½ million tons, and if Holland were used as the basis of comparison, our figures would be 125 million tons!

A 5¾-Billion-Pound Plant-Food Deficit

These figures are, of course, largely meaningless because of fundamental differences in geography, soils and other factors. But, when considered in connection with the further fact that every year American crops take out of the soil 5¾ billion pounds more plant food than is returned, I came to the conclusion that 7½ or 8 million tons of fertilizer certainly seemed to be wholly inadequate to the present-day needs of American agriculture.

This led me to study the probable causes for the slow growth in fertilizer consumption; and I came to the conclusion that there exists a "log-jam" of misunderstanding or half-understanding on the part of farmers and the general public with respect to the part fertilizer plays in sound farming practice, and that this "log-jam" is probably the principal reason for our relatively low fertilizer consumption.

I have tried to examine that "log-jam," and today I am firmly convinced that it is lodged around an inadequate understanding of the part which fertilizer plays in the economics of farming. It was to help blast this "log-jam" with a charge of the dynamite of fact, that I instituted, last Fall, a series of surveys of the farm problem, with particular reference to the cost of growing the principal money crops of this country.

* * *

It is almost a truism to say that the larger the yield per acre the lower the unit cost per pound or bushel of crop and therefore the greater the resulting

spread between cost and selling price. That is simply another way of stating the now-familiar arithmetical formula that Farm Income equals Price times Quantity minus Cost. Yet the entire farm problem hinges around that simple equation.

To define accurately the way in which fertilizer affects that profit equation was the object of my survey—and I believe the facts growing out of these surveys will go a long way toward breaking the "log-jam" to which I have referred.

What the Wheat Survey Showed

The first phase of the new survey consisted of an analysis of the unit cost of producing wheat both with and without fertilizer under fairly comparable conditions. The wheat survey disclosed that fertility in the principal wheat-growing sections is depleted to a point where the soil alone, without the application of commercial fertilizer, yielded an average of only 12 bushels per acre; that it cost an average of $13.73 an acre to grow wheat without fertilizer, and that the average cost per bushel was therefore $1.14.

On the other hand, wheat grown on the same land, under exactly the same crop conditions—except that commercial fertilizer containing properly balanced quantities of nitrogen, phosphorus and potash was used to supplement the existing fertility of the soil—yielded an average of 28½ bushels per acre, cost an average of $19.22 per acre to grow, and the average cost per bushel was 67 cents.

I do not have to remind you gentlemen how difficult it is to get accurate crop-production costs. But any cost inadequacies were constant in both computations; so the comparison of $1.14 a bushel to grow wheat *without* fertilizer against 67 cents a bushel *with* fertilizer is relatively true and I believe conclusive.

The Second Group of Surveys

The farmer is awed by the subject of costs; and one cannot blame him after making even a cursory examination of some of the complicated cost accounting methods which have been set up for his guidance. Our wheat experience made it obvious that in order to obtain the simple basic facts that establish the relation of fertilizer to farm economics we would have to develop a more workable cost method of our own. To that end we employed the firm of Ernst & Ernst, certified public accountants, to develop a practical system of costing

for each of the principal money crops, as well as to supervise the work of obtaining the necessary facts from representative farmers.

These cost data are now being audited and I shall give you a brief outline of the salient facts which they disclose, as well as some first-hand comments of typical farmers who became intensely interested in the very foundation of successful business, namely, a reasonably accurate knowledge of unit production costs.

In presenting these facts for your information, I would like to make a frank statement of purpose and intent. I did not invite you to be my guests in order to regale you with fertilizer propaganda; I did invite you in order to enlist your thoughtful help in interpreting and applying the facts which I shall now lay before you.

The Cotton Survey

First, let us consider the facts disclosed by our cotton survey. How much does it cost to grow cotton? Government figures show the cost per pound of lint to average about 16 cents, and the average yield per acre to be about 155 pounds. Small wonder that the cotton farmer is up in arms over prices in the present deranged market.

Our survey discloses that the yield of cotton increases in proportion to the amount of fertilizer applied per acre. There is nothing particularly new in that fact. It is important to note, however, that costs ran as low as 5 cents a pound where adequate quantities of fertilizer were used. On the other hand, it is only fair to state that due to variable cost factors, one farmer who used 500 pounds of fertilizer to the acre might grow his cotton for 7 cents a pound while it would cost another farmer using the same amount of fertilizer 10½ cents a pound. The many variable factors as between farms make it impossible to generalize on the cost of cotton; but a few typical instances will serve to indicate the highly essential part which fertilizer plays in the economics of cotton farming by reducing the unit cost of production.

Mr. J. F. Stewart farms seven acres of admittedly poor land in Calhoun County, Alabama. On this he grew six bales, averaging 541 pounds of lint cotton per acre. Mr. Stewart told our field man: "My land is so-called 'thin' soil and was known for years to be about the poorest land in this section." Although

Mr. F. M. Formby (left), of Piedmont, Calhoun Co., Alabama, inspecting a thrifty stalk of well-fertilized cotton. Note the heavy set of bolls; an index of profitable yields. Mr. Formby used 400 lbs. of a high-quality fertilizer. The result is expressed in his low unit cost of production—7 cents a pound.

Mr. Stewart's cost of $46.78 per acre was relatively high, his net cost per pound of lint cotton, after deducting the credit for seed, was only 8 cents.

In spite of heavy boll-weevil damage, Mr. F. M. Formby, another Calhoun County grower, averaged 409 pounds of lint cotton per acre over 22 acres; part of the field ran as high as 1½ bales to the acre. This crop was grown with 400 pounds of fertilizer to the acre.

Mr. Formby grew his 22 acres at an average cost of $28.74 an acre or at a cost of 7c per pound of lint cotton without deducting a credit for seed. His seed yield of 654½ pounds per acre was sold to neighboring farmers for planting purposes at five cents a pound and paid the total cost of production plus a profit of $3.98 per acre. Mr. Formby will have the income from 18 bales raised on his 22 acres as clear additional profit.

Mr. E. C. Newman of Sampson County, North Carolina, who uses 600 pounds of fertilizer and is producing a bale per acre on land that has a rental

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First, let us consider the facts disclosed by our cotton survey. How much does it cost to grow cotton? Government figures show the cost per pound of lint to average about 16 cents, and the average yield per acre to be about 155 pounds. Small wonder that the cotton farmer is up in arms over prices in the present deranged market.

Our survey discloses that the yield of cotton increases in proportion to the amount of fertilizer applied per acre. There is nothing particularly new in that fact. It is important to note, however, that costs ran as low as 5 cents a pound where adequate quantities of fertilizer were used. On the other hand, it is only fair to state that due to variable cost factors, one farmer who used 500 pounds of fertilizer to the acre might grow his cotton for 7 cents a pound while it would cost another farmer using the same amount of fertilizer 10½ cents a pound. The many variable factors as between farms make it impossible to generalize on the cost of cotton; but a few typical instances will serve to indicate the highly essential part which fertilizer plays in the economics of cotton farming by reducing the unit cost of production.

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Mr. E. C. Newman of Sampson County, North Carolina, who uses 600 pounds of fertilizer and is producing a bale per acre on land that has a rental

value of $8.00 per year, told our investigator some very interesting and significant facts.

"I realized some years ago," said Mr. Newman, "that it took just as much work and cost just about as much, except the harvesting, to make a half bale per acre as it does a bale, and for the past few years I have been using a heavier application of fertilizer and making a bale per acre."

"If I had made only ½ bale per acre this year, I figure that this amount would have sold for only $28.21 and as it is, based on today's market, my cotton will sell for $56.42 an acre. I think for a farmer to reduce his plant food application is to reduce his profit."

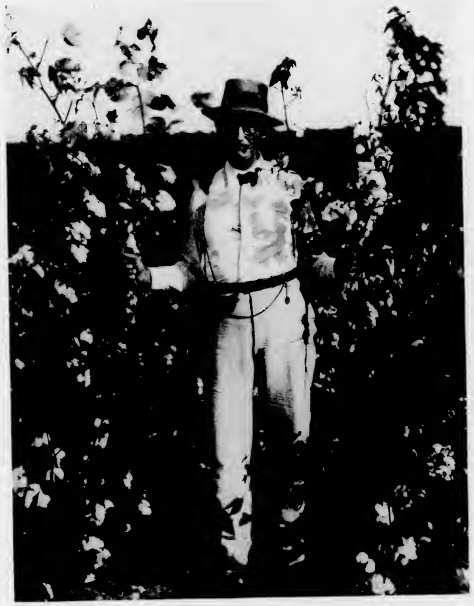
On his 425-acre farm in Orangeburg County, S. C., Mr. B. R. Bennett grows 200 acres of cotton, his average cost of producing a pound of lint cotton being 9 cents. This includes the salary of a farm manager, an extra expense which most cotton farmers do not have.

Mr. Bennett's per-acre costs are higher than those of the average cotton grower. Just four items in his costs, fertilizer, land rent, use and depreciation of farm machinery and salary of farm supervisor, amount to $21.19 per acre. Yet his high yields—427½ pounds of lint cotton per acre, reduced his unit cost to 9 cents a pound.

No Profit Possible at Present Prices

I quote these examples in order to amplify the picture as shown by the cost figures alone. At the same time, I think it only fair to state that at present prices for cotton, even the low-cost producer is barely breaking even and the small grower—call him perhaps the "subsistence farmer"—who at best ekes out a bare existence from his few acres of land, is today tightening his belt and looking ahead hopefully to the days when the cotton market again gets its bearings.

Cotton farming in the South is slowly undergoing a profound change, due to the stern pressure of low-cost production in other sections. Only by farming on a new plane of efficiency is it possible to safeguard the future of the Southern cotton grower. Several things seem to be indicated: (1) a determined effort to reduce costs by more efficient operation, including heavier fertilizer application; and (2) an equally determined and sustained effort to improve the quality of cotton.



Mr. B. R. Bennett, of Holly Hill, Orangeburg Co., S. C., grew 200 acres of cotton last season. Mr. Bennett is shown above holding stalks of well-fertilized cotton. Note that the stalks are heavily fruited, with matured bolls to the top of the stalk. More matured bolls per stalk spell increased yield and a lowered unit cost of production.

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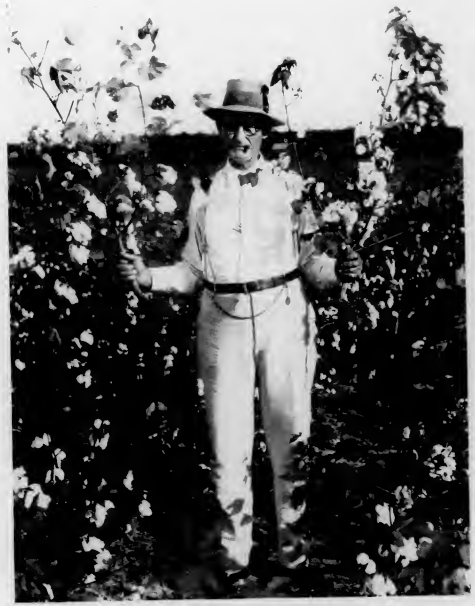

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Potato Production Costs

The latest available government statistics indicate that the average cost of growing a bushel of potatoes in the Northeastern states is 73 cents; in the Eastern states, 72 cents; in the Central states, 58 cents; and in the North Central states, 53 cents—an average for all sections of 64 cents a bushel.

Now the term "average" is in a sense meaningless; for an average is a composite of good, bad and indifferent performance. It is interesting, however, to note how the data obtained in our survey of the unit cost of producing potatoes compares with these averages.

For 44 farms, the average cost of growing an acre of potatoes was $109.10, or 54.4 cents a bushel. Here again some typical examples throw a sidelight on the present situation:

Rated as one of the most successful growers of certified seed potatoes in Northern New York, Frank Hobart, of Franklin County, to-day has 10,000 bushels to sell, his cost per bushel being 59 cents. Mr. Hobart keeps accurate records and knows exactly what his crop costs him. Two of Mr. Hobart's fields were found to be absolutely free from disease and one had only four-tenths of one percent on final inspection. His first-quality potatoes are now selling for $1.80 a bushel.

Mr. Hobart, who applies an even ton of a 4-8-7 fertilizer to the acre, says the fertilizer was of great value in bringing his crop to maturity with green tops. Because of the severe drought, on part of the same field where no fertilizer was used the tops of the potato plants dried up and were dead several weeks before the fertilized plants.

New England Potato Costs

Not all of the high-yield, low-cost, potato producers belong to one sex. Mrs. Belle Brown, of Coos County, New Hampshire, has a man-size job on her hands with the operation of a large farm, of which 30 acres are in potatoes.

For 23 years her husband had used heavy applications of a particular brand of fertilizer. She decided to follow the same practices. This year she used an application of one ton per acre of a 4-6-10 grade and produced an average yield of 350 bushels per acre at a cost of 59 cents per bushel. Some of her acres produced at the rate of 461 bushels. Her average yield of first-quality potatoes was 335 bushels per acre, a remarkably high percentage of marketable table stock.

An exceptional crop of certified seed potatoes grown on the farm of Frank Hobart, Gabriels, Franklin Co., N. Y. Mr. Hobart's potatoes averaged better than 300 bushels per acre. Careful farming, with the aid of a ton of fertilizer to the acre, enabled Mr. Hobart to grow his crop for less than 59 cents a bushel. At right, Mr. Hobart showing some of his potatoes.

For further facts on what it cost to grow potatoes under 1930 conditions, we sent our cost-finding expert to the most highly specialized potato-growing center in the country—Aroostook County, Maine.

There we obtained cost figures from Walter Hansen of Mars Hill, one of the best known growers in the county.

Mr. Hansen knows potatoes from more than one angle. He grows them on his own 450-acre farm. He buys from and sells for his neighbors, and he rents storage space to them in his modern fire-proof potato warehouse.

For his 1930 crop, he applied a 6-8-7 fertilizer at the rate of 1¼ tons per acre. His fertilizer cost of $53.12 per acre, exceeded by $2.29 the entire labor cost of soil preparation, planting, cultivating, dusting, digging and marketing. He used $30 worth of seed per acre on land that has a rental value of $20. Although his yield was not exceptional, 115 barrels or 316¼ bushels per acre, his potatoes graded 90% firsts and cost him 57 cents a bushel to grow.

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Mr. David Daigle is another progressive Aroostook County grower. He grew sixty acres of potatoes this year which yielded at the rate of 150 barrels or 412½ bushels per acre. His seed cost him $2.62 an acre more than his fertilizer, which he applied at the rate of one ton to the acre. Since he intended to sell his crop for certified seed, Mr. Daigle gave it extra good care throughout the growing season, using 4¾ tons of spray materials in going over his vines seven times. In addition, there were extra costs for weeding, roguing and certification, in spite of which Mr. Daigle shows a production cost of only 43c per bushel.

Western Potato Costs

Jumping across the country to North Dakota, we find another important potato-producing district and more low-cost farmers. Stanley Ganssle farms 4000 acres in Pembina County, of which 700 acres were in potatoes this year. On 500 acres which he fertilized, his costs were $66.27 an acre or 44 cents a bushel for a crop of 150 bushels to the acre. Potatoes grown on 200 acres which were unfertilized cost him $52.13 an acre, or 52 cents a bushel, to grow.

Figuring potatoes at his selling price of $1.25 a bushel, an extra $14.14 spent for fertilizer, extra picking, grading and marketing increased his income $62.50 an acre. The U. S. Department of Agriculture figures show that the average yield in this section is 112 bushels per acre at a bushel cost of 53 cents. Mr. Ganssle obtained 38 bushels per acre above the average for a cost 9 cents a bushel below average.

W. H. Olds of Orsego County, Michigan, told our cost-finding expert that considering the large investment necessary to grow certified potatoes, he could not afford to gamble on a small yield. His yield on 10 acres, which had been fertilized at the rate of 500 pounds per acre, was 210 bushels an acre, 175 bushels of these grading as number ones. His total per-acre cost was $122.43 and his cost per bushel 58 cents. Mr. Olds figured that without the use of fertilizer it cost him 74 cents a bushel to grow potatoes.

In the case of potatoes, just as in cotton, we found the same wide fluctuation in costs among different farms. One cannot generalize and say that the use of a given increased quantity of fertilizer will reduce the cost of growing every bushel by a given amount. That is impossible because of the many variables. It is, however, clearly apparent that the adequate use of fertilizer in conjunction with sound farming practice reduces the cost of production to a point where real profits can be shown when potato prices are favorable. In times of low prices, when the average-yield grower is going into the red, the farmer

Mr. W. H. Olds, of Elmira, Otsego Co., Michigan, is shown above, at left, discussing his production costs with the A. A. C. Company's accountant. Mr. Olds grew potatoes for 58 cents a bushel, where he used fertilizer. On the other hand, unfertilized potatoes cost 74 cents a bushel to grow.

who grows his potatoes at low cost per bushel safeguards himself against loss if indeed he does not actually show a profit.

The Corn Survey

Latest available government statistics show the average yield and cost of growing a bushel of corn to be 39 bushels an acre at a cost of 68 cents per bushel in the East North Central States; 29 bushels an acre at a cost of 61 cents per bushel in the West North Central States, and 23 bushels an acre at a cost of 84 cents per bushel for the South Central States. The country average yield is 31 bushels per acre grown at an average cost of 73 cents per bushel.

With these facts as background, let us examine the cost information disclosed by the corn survey.

Our surveys of the cost of growing corn covered farmers in Ohio, Indiana, Illinois, Michigan, Minnesota, and Iowa. For 20 farms using adequate quantities

Mr. David Daigle is another progressive Aroostook County grower. He grew sixty acres of potatoes this year which yielded at the rate of 150 barrels or 412½ bushels per acre. His seed cost him $2.62 an acre more than his fertilizer, which he applied at the rate of one ton to the acre. Since he intended to sell his crop for certified seed, Mr. Daigle gave it extra good care throughout the growing season, using 4½ tons of spray materials in going over his vines seven times. In addition, there were extra costs for weeding, roguing and certification, in spite of which Mr. Daigle shows a production cost of only 43c per bushel.

Western Potato Costs

Jumping across the country to North Dakota, we find another important potato-producing district and more low-cost farmers. Stanley Ganssle farms 4000 acres in Pembina County, of which 700 acres were in potatoes this year. On 500 acres which he fertilized, his costs were $66.27 an acre or 44 cents a bushel for a crop of 150 bushels to the acre. Potatoes grown on 200 acres which were unfertilized cost him $52.13 an acre, or 52 cents a bushel, to grow.

Figuring potatoes at his selling price of $1.25 a bushel, an extra $14.14 spent for fertilizer, extra picking, grading and marketing increased his income $62.50 an acre. The U. S. Department of Agriculture figures show that the average yield in this section is 112 bushels per acre at a bushel cost of 53 cents. Mr. Ganssle obtained 38 bushels per acre above the average for a cost 9 cents a bushel below average.

W. H. Olds of Otsego County, Michigan, told our cost-finding expert that considering the large investment necessary to grow certified potatoes, he could not afford to gamble on a small yield. His yield on 10 acres, which had been fertilized at the rate of 500 pounds per acre, was 210 bushels an acre, 175 bushels of these grading as number ones. His total per-acre cost was $122.43 and his cost per bushel 58 cents. Mr. Olds figured that without the use of fertilizer it cost him 74 cents a bushel to grow potatoes.

In the case of potatoes, just as in cotton, we found the same wide fluctuation in costs among different farms. One cannot generalize and say that the use of a given increased quantity of fertilizer will reduce the cost of growing every bushel by a given amount. That is impossible because of the many variables. It is, however, clearly apparent that the adequate use of fertilizer in conjunction with sound farming practice reduces the cost of production to a point where real profits can be shown when potato prices are favorable. In times of low prices, when the average-yield grower is going into the red, the farmer

Mr. W. H. Olds, of Elmira, Otsego Co., Michigan, is shown above, at left, discussing his production costs with the A. A. C. Company's accountant. Mr. Olds grew potatoes for 58 cents a bushel, where he used fertilizer. On the other hand, unfertilized potatoes cost 74 cents a bushel to grow.*

who grows his potatoes at low cost per bushel safeguards himself against loss if indeed he does not actually show a profit.

The Corn Survey

Latest available government statistics show the average yield and cost of growing a bushel of corn to be 39 bushels an acre at a cost of 68 cents per bushel in the East North Central States; 29 bushels an acre at a cost of 61 cents per bushel in the West North Central States, and 23 bushels an acre at a cost of 84 cents per bushel for the South Central States. The country average yield is 31 bushels per acre grown at an average cost of 73 cents per bushel.

With these facts as background, let us examine the cost information disclosed by the corn survey.

Our surveys of the cost of growing corn covered farmers in Ohio, Indiana, Illinois, Michigan, Minnesota, and Iowa. For 20 farms using adequate quantities

of fertilizer, the average yield per acre was 59 bushels and the average cost per bushel amounted to 40 cents, or 33 cents less per bushel than the government average.

Some typical cases disclosed by the survey tend to shed additional light on the part which fertilizer plays in reducing the unit cost of production of this crop.

Corn for 32 Cents a Bushel

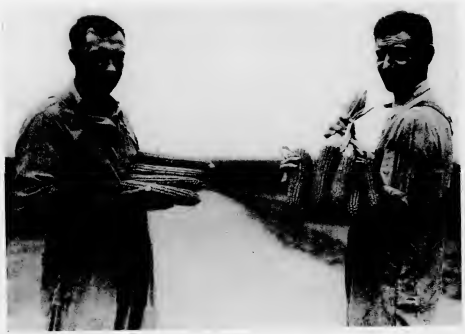
Although Wisconsin was not hard hit by the drought, it was considered a dry summer on the farm of Katterhenry Brothers of Beloit, Rock County, Wisconsin. Three corn fields averaged 62 bushels to the acre; one field averaged 80 bushels per acre, and their costs per bushel were 38 and 32 cents, respectively.

Katterhenry Brothers are dairy farmers, which accounts in part for their high yields, since they use plenty of manure and grow leguminous crops such as clover and alfalfa. They had 55 acres in alfalfa this year, which yielded 3 tons to the acre in spite of the drought; one field yielded 4½ tons to the acre. They find that it pays to use fertilizer on alfalfa, for they are now able to keep ten more milk cows than formerly, increasing their income about $2,000 per year.

Most dairy farmers who are able to apply as much as 9 tons of manure to the acre as are Katterhenry Brothers, do not feel that their corn needs commercial fertilizer. According to W. F. Katterhenry, however, an application of only 125 pounds of a 3-14-6 grade increased the yield at least 15 bushels per acre to a total of 80 bushels. They figured their cost at $25.39 per acre, or 32c a bushel.

Katterhenry Brothers sell about 300 bushels of corn every year for seed purposes. Last year they exhibited ten ears of Golden Glow corn at the International Grain Show at Chicago and won second prize. Two years ago they had one field that yielded 102 bushels to the acre which, at the same per-acre expense, cost them only 26 cents per bushel to grow.

Fifteen years ago, Jacobson Brothers began raising seed corn on their 87-acre home farm near Green Bay, Wisconsin. Since they began using commercial fertilizers, in 1915, their corn has been averaging from 90 to 100 bushels to the acre and never fails to mature even in seasons of late and early frosts. They have harvested as much as 330 bushels of shelled, graded seed corn from 6½ acres. Their crop in 1929 ran 80 bushels to the acre and cost them 46 cents a bushel to grow. They got $4 a bushel for the seed they sold and the remainder was



At Beloit, Rock Co., Wisconsin, Katterhenry Brothers, shown above displaying some well-developed ears of corn, grew their crop at an average cost of 33 cents a bushel. They state that fertilizer was a vital factor in producing this result.

fed to their stock. They began by using 125 pounds of fertilizer to the acre and now broadcast 250 pounds per acre and apply 125 pounds per acre in the hill when planting.

In 1909 their total farm income was $1,295. In 1921, the first year they sold seed corn, it jumped to $3,758 and in 1928 to $5,866.

Corn Belt Costs

Out in Iowa, the greatest corn state in the Union, E. S. Dyas & Son of Bellevue, Jackson County, are growing corn on fertilized land for 41c an acre.

Although these farmers use as much as 12 tons of manure to the acre, they have found it pays to use commercial fertilizer in addition. They applied 140 pounds of fertilizer to the acre and obtained a yield of 85 bushels to the acre, costing 41 cents per bushel. Their total acre costs of $36.04 were high because the rental value of their land is $15.00 an acre, including $2.00 per acre taxes.

They estimate that without commercial fertilizers, their crop would be 15 bushels less per acre and their costs 5 cents more per bushel.

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Heidt King of Bureau County, Illinois, is another corn grower who has brought his costs down to a point where he is assured a profit regardless of whether he sells or feeds his crop. In spite of drought, his 130 acres of corn, on which he used 125 pounds of mixed fertilizer to the acre, averaged 65 bushels to the acre this year, and was grown at a cost of $21.09 per acre or 32 cents a bushel. Where Mr. King did not apply fertilizer to his corn, his yield was 35 bushels per acre, costing $15.52 per acre, or 44 cents a bushel to grow. The fertilized corn was of better quality and sold for 2 cents a bushel more.

L. V. Chamberlain of Williams County, Ohio, is another corn grower who believes in making his own farm tell him how to reduce his costs. Last year, Mr. Chamberlain grew 18 acres of corn, half unfertilized and the other half fertilized at the rate of 110 pounds of a 3-10-6 mixture per acre. His unfertilized 9 acres husked out at the rate of 37 bushels per acre and cost him $22.75 an acre to grow, or 61 cents per bushel.

On the 9 fertilized acres, the yield was 62 bushels an acre and the total production costs only $2.73 additional, or $25.48 an acre. This brought the per-bushel cost down to 41 cents.

* * *

Where the "Farm Problem" Really Begins

These surveys prove nothing that has not been known in a general way for many years. Every man who has ever run a factory has encountered the same principle in operation. For every factory there is a "deadline" point of production or output where overhead is absorbed and beyond which each unit of product pays a handsome contribution toward profit. It is precisely the same in farming. Higher yields per acre obtained by using adequate amounts of fertilizer increase the yield or "divisor" and thereby reduce the cost of each unit grown. Or, to state the principle in another way: fertilizer increases the number of bushels obtained over and above the "deadline" or break-even point where expenses have been absorbed and profit begins.

The solution of the present phase of the farm problem lies primarily in the cost side of the profit equation to which I have previously referred. I believe there is pretty general agreement upon that point. The very essence of low unit cost lies in increased yield per acre. And the minute you begin to talk about

increased yields, the question of the effect upon crop prices takes the center of the stage.

The financial editor of one of the leading newspapers of the country, in commenting upon our wheat survey, made this observation:

> "The American Agricultural Chemical Company holds in its wheat survey that larger yields would lower the cost of production. This is true if a market could be found for the produce after it is grown. It tells us how the farmer can grow larger crops, but it does not tell us where he would sell them. And if it does not know where he could sell them, it might be advisable to explain how prices would be held even at the current low levels with the larger production. We sympathize with the Company's desire to sell fertilizer, but believe that it could get farther in that respect if it were to devise some way to market farm produce at higher prices."

There, if you please, is an assignment for the shoulders of an Atlas!

However, the editor does put his finger on a point that has clouded the thinking of many people in considering the relationship of fertilizer to the economics of crop production. What are the facts, and what is the way out? Here we run head on into the crux of the very same problem that Theodore Roosevelt was talking about back in 1908.

Certain essential facts seem to point the way. In farming, as in industry, when the pinch comes the low-cost producer survives and the high-cost producer has a difficult time. You see this same force at work in other industries. The high-cost copper producer has to shut down when the price of metal declines to a point which may still be remunerative to the low-cost producer. When prices rise, the high-cost producer goes back into production.

There are six million farmers in the United States. Only about two million now use fertilizer. It is also a fact that only about one-third of the six million farmers in this country today get average yields; and the remaining two-thirds get average yields or below.

The Low-Cost Producer Wins

The low-cost grower over a period of years makes a splendid profit from farming. The average cost grower rides with the tide of prices, making money

or not, as crop prices are up or down. The below-average producer feels the pinch of low prices most severely and gains the least when prices swing back to normal. To call this farmer who gets below-average yields the "marginal farmer" is to seek to reduce to economic formula the flesh and blood of some ten million people who are obtaining a meagre subsistence from the soil. Call him, then, the "subsistence farmer." *He is the farm problem.* His output, produced at high cost in most cases from low-grade land, swings the balance of supply in a time of crop over-production.

It does no good merely to say that America has too much land under cultivation. We all remember the perfervid cry, "Food will win the war," with its effect upon crop acreage. The facts about how, for generations, vast areas have steadily been opened to cultivation, need no reiteration.

The crucial fact remains that we have an excess productive capacity in agriculture and the question for this country to solve is, what are we going to do about it?

Agriculture, like every other industry, must survive on the merits of its management. It may be possible to put props under it for the time being; but the dark cloud of potential over-production will always hover in the middle distance. The solution is not to be found by leveling down the productive efficiency of our land. It is not to be found by using less fertilizer or by continuing with the present rates of application where they are inadequate.

Alabama has already given serious thought to the subject of over-production. At a conference called recently in Montgomery by Governor Graves and attended by farmers, representatives of farm organizations, business men, bankers and fertilizer salesmen, a resolution directed at a nationwide restriction of cotton planting to 40 million acres was adopted.

The ninth paragraph of the resolution read in part: "*Resolved* that production costs of cotton and all other products be reduced to a minimum by improving the condition and fertility of the soil by terracing, and the growing of legumes, and proper use of commercial fertilizer, by using enough machinery and power for efficiency, by planting seed of the best varieties, etc."

At the same meeting, Dr. Bradford Knapp, President of Alabama Polytechnic Institute at Auburn advocated raising feedstuffs at home; raising cotton as a cash crop; improving the staple and at the same time reducing the acreage, and with proper fertilization, increasing the yield, thus obtaining a lower per-

pound cost. He stated that in a situation of this kind, acreage reduction would take care of itself.

The low-cost farmer, some two million of him, is bound, if he would safeguard his profits, to increase his use of fertilizer up to the point of diminishing returns. The farmer who is already getting average yields, and there are some two million of him, is bound to see the utter necessity of using more fertilizer to raise himself into the bracket of low-cost producers. Always there remain the two million high-cost producers who are entitled to the constructive thought and the vigorous assistance of an entire nation in the solution of a very serious problem. How are we to help them?

Wanted—A Practical Program

This country needs a far-seeing farm policy. While we are applying poultices to the sore spots, while we are seeking to aid in the immediate emergency, are we not blinding ourselves to the fact that we are allowing trial and error to govern our thinking and action?

Headway is being made in more efficient marketing. But have we as a nation, gone as far as we should in showing the farmer how to improve his own position by crop diversification which will enable him to distribute the risks always present in one-crop production? Have we a well-organized, consecutive plan for devising new uses for farm products, for enlarging markets where that is practical? Are we frankly facing the fact that there can be no permanent solution of the farm problem without a program of land utilization?

In other words, are we drifting, applying palliatives when we should at the same time be seeking to find a solution for the underlying causes of what we term the farm problem?

In the solution of every problem there is a short-road and a long-road job to be done. I feel we are making some headway with the short-road aspects of the farm problem. But I am convinced that we are making practically no headway with the long-road job.

As I see it, one of the keys to the situation is a program of acreage reduction that has as its objective the relieving of good agricultural land from the destructive competition of so-called marginal land. This idea has been discussed for a generation, but that is as far as it has gone. A survey of farmlands in the

north, central and southeastern sections has shown that 40 per cent of the land might be termed as marginal.

I would like to suggest that you gentlemen, representing the farmer, and comprising as you do, one of the strongest voices of public opinion in this country, lend your support to the development of a program of land utilization as a basic force in solving the farm problem. The Federal government, in co-operation with the governments of the respective states, should organize without delay a Land Utilization Survey which the force of public opinion should insist on translating into a working program at the earliest practical date.

The Soundest Immediate Relief

It takes time to work out the long-road phases of the farm problem. What can be done immediately to lighten the farmer's burden? The surest means within his own control is to reduce the cost of growing his crops.

I have tried to demonstrate through my cost-finding surveys how fertilizer, by increasing the yield per acre, makes it possible to reduce the unit cost of production to a point where even at low crop prices nominal profits can be shown or losses minimized. As prices recover, low costs make it possible to show substantial profits and over a period of years make farming a thoroughly profitable business.

I believe the facts I have submitted prove that the adequate use of fertilizer is the soundest source of immediate relief for the farmer. In closing I would like to tell you of one of literally hundreds of cases which bear out this point.

The Story of Chris Michelson

At Hazelhurst, in Oneida County, Wisconsin, one Chris Michelson owns 700 acres of land, 160 acres of which he bought 19 years ago with $480 he had saved as a logger. Mr. Michelson said:

> "I have kept a complete record of the costs of growing my potato crop for several years, and I found that the only way to consistently make money growing a crop is to secure large yields. I have found that the bigger the yields, the lower the production cost per bushel, and this has protected me against low prices. I have produced potatoes as low as 27 cents per bushel. Three years ago when prices were low, I grew my potatoes for 35 cents per bushel.

Mr. Chris Michelson, of Hazelhurst, Oneida Co., Wisconsin, has made farming pay. In the last 5 years he has produced and sold at a profit $67,000 worth of potatoes and other crops. A low unit cost which he has maintained year after year by adequate fertilization has meant consistent profits. (Above) Harvesting potatoes on the Michelson farm. (Right) Mr. Michelson with two of his eight children, displaying the book in which he has kept continuous cost records for every day he has farmed.

> That year I sold my crop for 39 cents and made a profit of 4 cents per bushel. I could not have done this without a large yield.
>
> "This year I applied 500 pounds of fertilizer to the acre and in spite of a very dry season, my potatoes yielded 203 bushels to the acre. After figuring the expense of growing the crop, I produced my potatoes for 50 cents a bushel and made a profit of $129.37 per acre. In the last five years I have sold $67,000 worth of produce from 170 acres of cultivated land and potatoes have been my main crop."

Mr. Michelson is a sound business man. He has been able to raise and educate a family of eight children, build a fine home in place of the humble log house in which he started 19 years ago, and equip it with electric lights, radio, a grand piano and other home improvements and luxuries. Chris Michelson has found an answer to the farm problem right on his own farm.

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Looking Ahead

There can be no substitute for individual initiative, efficiency, and intelligence. The most immediate and practical solution of the farm problem is primarily in the hands of the farmer himself. He is entitled to look to his government, however, for a long-road policy that will correct the fundamental maladjustments which exist at the present time.

We are passing through a period of confusion and uncertainty. Every major economic reaction seems to have three successive stages. Panic on the stock exchanges, followed by a sharp let-down in public buying and a consequent drop in the price of the things the public consumes. In the final stage, agriculture feels the brunt of the depression; after which the corner is turned and things begin to right themselves. I believe we are very nearly out of the woods so far as this depression is concerned.

Now is the time for the farmer to plan to recoup his income when crop prices show improvement. This is no time to adopt a narrow view of economy, to reduce his application of fertilizer and thereby reduce his yields, increase his unit costs and narrow his profit spread. This is the time when foresight and courage count. There's an old Latin proverb—*possunt quia posse videntur*—"they can because they *think* they can."

It is very timely.

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